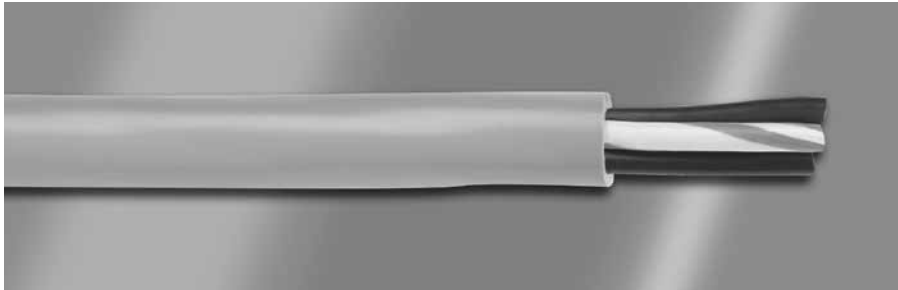


## Industrial Automation Cable

*Seamless communication for robust industrial environments*



**W**hether you are designing a device for error proofing to increase quality or motion sensing to improve safety, trust Alpha Wire for all your Industrial Automation needs.

As industrial automation systems continue to increase in complexity, we understand the challenges that engineers and manufacturers face in designing and interconnecting system components from sensors to top-level controllers. Our range of industrial automation cables combines the industry-leading quality and exceptional reliability you expect with Alpha Wire with the performance to meet the rigorous requirements of the major automation communication architectures.

### ControlNet™

Low-loss RG-6/U coax designed to meet the high-speed, time-critical requirements of modern ControlNet factory-floor automation systems.

### RS-485

Bringing proven data transmission protocol to the factory floor, rugged RS-485 cables reduce electrical noise sensitivity to keep reliability and performance at world-class levels.

### DeviceNet™

Meeting ODVA thick and thin specifications, the cables comply with Allen-Bradley 1485 CPI-A and 1485 CPI-C, and support high data rates (500 kb/s at 100 m and 125 kb/s at 500 m).

### Fieldbus and PROFIBUS®

A complete family meets ruggedness, performance, and quality requirements of almost any fieldbus and PROFIBUS application environment.

### Industrial Twinax

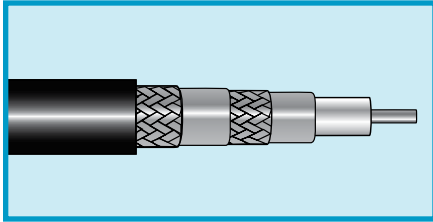
A robust physical media for the transmission of PLC/DCS signals in real-time, high-throughput applications, including Allen-Bradley Data Highway networks. The cables may be installed in the same tray or conduit as 600-volt power cable.

### Series L

Series L cables combine up to 4 twinax cables and up to 36 control cables in a single rugged cable.

# ControlNet

## 300 V, RG-6/U Coaxial Cable, Double Braid and Foil Shielded



UL CL2R  
UL CMR  
CSA CMG FT4

### Operating Temperature

- -30°C to +75°C

### Materials

- Solid bare Copperweld conductor
- Foam polyethylene insulation
- Shielding: double braid and foil  
Foil +60% aluminum braid +  
foil +40% aluminum braid
- Black PVC jacket

### Features

- UL Sunlight Resistant
- 75-ohm nominal impedance
- 82% velocity of propagation
- 16.2 pF/ft (53.1 pF/m) nominal capacitance

### Availability

100 ft (30.5 m)  
500 ft (152 m)  
1000 ft (305 m)

### FIT® Tubing Recommendations

- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin

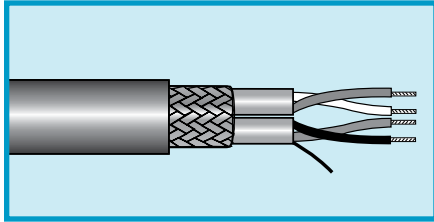
Part No.	Nominal Diameter		Center Conductor		Nominal Impedance (ohms)
	Inch	mm	AWG	mm <sup>2</sup>	
6458	0.298	7.57	18	0.82	75

Frequency (MHz)	Nominal Attenuation	
	Attenuation, Nom.	
	dB/100 ft	dB/100 m
1	0.35	1.1
2	0.38	1.2
5	0.45	1.5
10	0.59	1.9
20	0.86	2.8
50	1.37	4.5
100	1.97	6.5
200	2.82	9.3
300	3.48	11.4
400	4.04	13.3



## DeviceNet

300 V Power and Data, Class 2, ODVA Thick and Thin Trunks



Part No.	Type	Pairs	Nominal Diameter	
			Inch	mm
6451	Thick	1 Power: 15 AWG (1.75 mm <sup>2</sup> ), 19/0.0135 (19 x 0.35 mm) stranding	0.480	12.19
		1 Data: 18 AWG (0.96 mm <sup>2</sup> ), 19/30 (19 x 0.25 mm) stranding		
6452	Thin	1 Power: 22 AWG (0.38 mm <sup>2</sup> ), 19/34 (19 x 0.16 mm) stranding	0.280	7.11
		1 Data: 24 AWG (0.24 mm <sup>2</sup> ), 19/36 (19 x 0.13 mm) stranding		

UL CMG

UL PLTC-ER (Thick)

UL CL2 (Thin)

CSA CMG FT4

CSA AWM I/II A

### Operating Temperature

- -20°C to +75°C (static)
- 0°C to +80°C (dynamic)

### Conductor Color Coding

- Black-red power
- Blue-white data

### Materials

- Tinned copper conductors
- Each pair individually foil shielded
- PVC insulation (power pair)
- Foam HDPE insulation (data pair)
- 65% tinned copper braid overall
- Slate PVC jacket

### Features

- Oil resistant
- UL Sunlight Resistant
- 120-ohm nominal impedance (data pair)
- Compliant with Allen-Bradley part numbers 1485 CPI-A and 1485 CPI-C

### Availability

100 ft (30.5 m)  
500 ft (152 m)  
1000 ft (305 m)

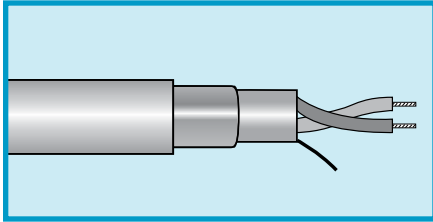
### FIT® Tubing Recommendations

- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin



# Fieldbus

## 300 V Single-Pair Cable, Fieldbus Types A and B



Part No.	Fieldbus Type	Pairs	Conductor		Stranding		Nominal Diameter	
			AWG	mm <sup>2</sup>	AWG	mm	Inch	mm
6459	A	1	18	0.90	7/26	7 x 0.40	0.253	6.43
6460	B	1	22	0.33	7/0.0096	7 x 0.24	0.196	4.97

UL PLTC-ER  
 UL CM  
 UL ITC  
 CSA CM

### Operating Temperature

- -30°C to +105°C

### Conductor Color Coding

- Blue-orange

### Materials

- Tinned copper conductors
- Polyolefin insulation
- Foil shield
- Orange PVC jacket

### Features

- UL Sunlight Resistant
- 100-ohm nominal impedance

### Availability

100 ft (30.5 m)  
 500 ft (152 m)  
 1000 ft (305 m)

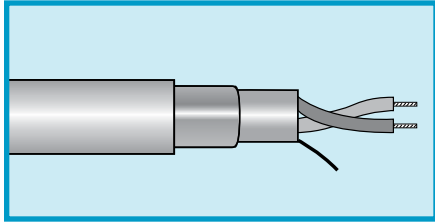
### FIT® Tubing Recommendations

- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin



# High-Speed Fieldbus

## 300 V Single-Pair Cable



Part No.	Pairs	Conductor		Stranding		Nominal Diameter	
		AWG	mm <sup>2</sup>	AWG	mm	Inch	mm
6461	1	22	0.35	7/30	7 x 0.25	0.351	8.92

UL PLTC  
UL CM  
CSA CM

### Operating Temperature

- -40°C to +75°C

### Conductor Color Coding

- Blue-orange

### Materials

- Tinned copper conductors
- Foam high-density polyethylene insulation
- Foil shield
- Orange PVC jacket

### Features

- UL Sunlight Resistant
- 150-ohm nominal impedance

### Availability

100 ft (30.5 m)  
500 ft (152 m)  
1000 ft (305 m)

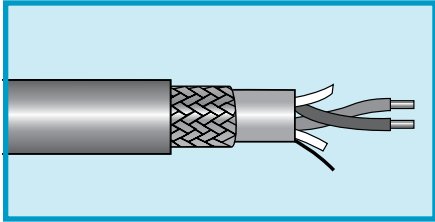
### FIT® Tubing Recommendations

- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin



# PROFIBUS-DP

## 300 V Single-Pair Cable



Part No.	Pairs	Conductor		Stranding		Nominal Diameter	
		AWG	mm <sup>2</sup>	AWG	mm	Inch	mm
6462	1	22	0.32	Solid		0.315	8.00
6463	1	22	0.35	7/30	7 x 0.25	0.315	8.00

UL AWM 20201 (6462 only)

UL PLTC

UL CMG

CSA CMG FT4

### Operating Temperature

- -30°C to +75°C (PLTC, CMG)
- -30°C to +60°C (AWM)

### Conductor Color Coding

- Red-green

### Materials

- Tinned solid or stranded copper conductors
- Foam high-density polyethylene insulation
- Foil +65% tinned copper braid shield
- Purple PVC jacket

### Features

- UL Sunlight Resistant
- 150-ohm nominal impedance

### Availability

100 ft (30.5 m)

500 ft (152 m)

1000 ft (305 m)

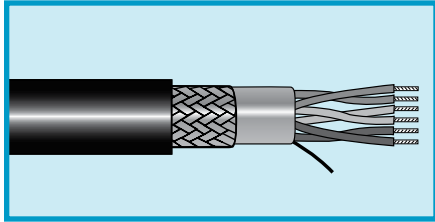
### FIT® Tubing Recommendations

- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin



# RS-485 Cable

600 V Shielded, Multipair



**UL CM, CMG  
UL TC, PLTC  
CSA CM, CMG FT1**

### Operating Temperature

- -20°C to +60°C

### Conductor Color Coding

- Chart M (page 518), except 6454

### Materials

- Tinned copper conductors
- Foam high-density polyethylene insulation
- Foil +65% tinned copper braid shield
- Black PVC jacket

### Features

- UL Sunlight Resistant
- 120-ohm nominal impedance

### Availability

100 ft (30.5 m)  
500 ft (152 m)  
1000 ft (305 m)

### FIT® Tubing Recommendations

- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin

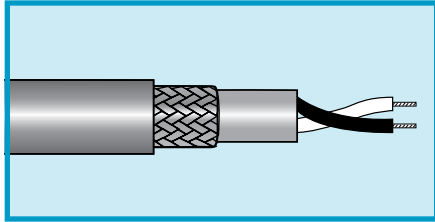
22 AWG (0.35 mm <sup>2</sup> )							
Stranding: 7/30 (7 x 0.25 mm)							
Part No.	Pairs	Nominal Diameter		Insulation Thickness		Jacket Thickness	
		Inch	mm	Inch	mm	Inch	mm
6453	1	0.284	7.21	0.028	0.71	0.042	1.07
6454*	1.5	0.300	7.62	0.032	0.81	0.042	1.07
6455	2	0.414	10.52	0.024	0.61	0.053	1.35
6456	3	0.414	10.52	0.022	0.56	0.053	1.35
6457	4	0.448	11.38	0.022	0.56	0.053	1.35

\*Conductor color coding: white/orange-orange/white pair, white-blue single conductor.



# Industrial Twinax

600 V Braid Shield, Single Pair



Part No.	Pairs	Conductor		Stranding		Nominal Diameter	
		AWG	mm <sup>2</sup>	AWG	mm	Inch	mm
6450	1	18	0.90	7/26	7 x 0.40	0.324	8.23

UL TC, PLTC, ITC  
UL CMG  
CSA CMG FT4

### Operating Temperature

- 40°C to +75°C

### Conductor Color Coding

- Blue-white

### Materials

- Tinned stranded copper conductors
- Flame-resistant polypropylene insulation
- Foil +55% tinned copper braid shield
- Blue PVC jacket

### Features

- UL Sunlight Resistant
- 78-ohm nominal impedance
- Meets the requirements of Allen-Bradley Data Highway Networks

### Availability

100 ft (30.5 m)  
500 ft (152 m)  
1000 ft (305 m)

### FIT® Tubing Recommendations

- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin

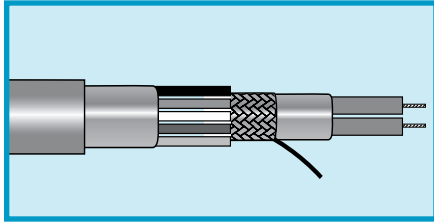




## Series L Control Cables

Data and Control Power in One Cable

600 V Composite Twinax and Multiconductor Cable



18 AWG (0.90 mm <sup>2</sup> ) Twinax			16 AWG (1.31 mm <sup>2</sup> ) Control			
Stranding: 7/26 (7 x 0.40 mm) Nominal impedance: 78 ohms			Stranding: 65/34 (65 x 0.61 mm)			
Part No.	Twinax	Control Conductors	Nominal Diameter		Jacket Thickness	
			Inch	mm	Inch	mm
LD61002	3	0	0.863	21.92	0.080	2.0
LE61002	2	18	1.028	26.11	0.080	2.0
LH61002*	1	5	0.721	18.31	0.080	2.0
LI61002	1	0	0.472	11.99	0.080	2.0
LJ61002*	1	12	0.721	18.31	0.080	2.0
LK61002*	2	34	1.247	31.67	0.080	2.0
LM61002	2	26	1.247	31.67	0.080	2.0
LO61002*	4	28	1.375	34.93	0.080	2.0

\*Not UL TC-ER.

### UL TC-ER

#### Operating Temperature

- 25°C to +90°C

#### Conductor Color Coding

- Chart A (page 516)

#### Materials

##### Twinax

- Tinned copper conductors
- Fluoropolymer insulation
- Foil + braid shield
- PVC jacket
- Jacket colors: 1 Blue, 2 Orange, 3 Brown, 4 Violet

##### Control

- Bare copper conductors
- PVC/nylon insulation

##### Overall

- Blue PVC jacket

#### Features

- UL Sunlight Resistant
- UL Oil Res. I
- UL Direct Burial
- FT4
- Twinax is Belden YR29281 Blue Hose® cable, approved for Allen-Bradley Data Highway
- Suitable for use in Class I, Division 2 locations per Article 501 of the National Electric Code

#### Availability

Bulk, cut to length

#### FIT® Tubing Recommendations

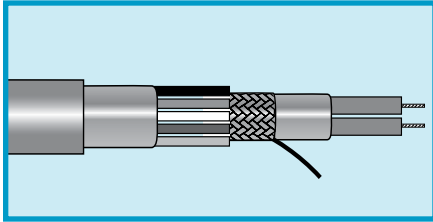
- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin



## Series L Control Cables

Data and Control Power in One Cable

600 V Composite Twinax and Multiconductor Cable



### UL TC-ER

#### Operating Temperature

- 25°C to +90°C

#### Conductor Color Coding

- Chart A (page 516)

#### Materials

##### Twinax

- Tinned copper conductors
- Fluoropolymer insulation
- Foil + braid shield
- PVC jacket
- Jacket colors: 1 Black, 2 Orange, 3 Brown, 4 Violet

##### Control

- Bare copper conductors
- PVC/nylon insulation

##### Overall

- Blue PVC jacket

#### Features

- UL Sunlight Resistant
- UL Oil Res. I
- UL Direct Burial
- FT4
- Twinax is Belden YR29281 Blue Hose® cable, approved for Allen-Bradley Data Highway
- Suitable for use in Class I, Division 2 locations per Article 501 of the National Electric Code

#### Availability

Bulk, cut to length

#### FIT® Tubing Recommendations

- FIT-221: General-purpose, cross-linked polyolefin
- FIT-321: Medium-wall, adhesive-lined, cross-linked polyolefin

#### Conductor Color Coding

Conductor	Color					
	LK61002*	LO61002*	LM61002	LE61002	LJ61002*	LH61002*
0	Green/Yellow	Green/Yellow	Green/Yellow	Green/Yellow	Green/Yellow	Green/Yellow
1	Black	Black	Black	Black	Black	Black
2	White	White	White	White	White	White
3	Red	Red	Red	Red	Red	Red
4	Blue	Blue	Blue	Blue	Blue	Blue
5	Orange	Orange	Orange	Orange	Orange	Orange
6	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
7	Brown	Brown	Brown	Brown	Brown	Brown
8	Red/Black	Red/Black	Red/Black	Red/Black	Red/Black	Red/Black
9	Blue/Black	Blue/Black	Blue/Black	Blue/Black	Blue/Black	Blue/Black
10	Orange/Black	Orange/Black	Orange/Black	Orange/Black	Orange/Black	Orange/Black
11	Yellow/Black	Yellow/Black	Yellow/Black	Yellow/Black	Brown/Black	Brown/Black
12	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black
13	Black/Red	Black/Red	Black/Red	Black/Red	Black/Red	Black/Red
14	Blue/Red	Blue/Red	Blue/Red	Blue/Red	Blue/Red	Blue/Red
15	Orange/Red	Orange/Red	Orange/Red	Orange/Red	Orange/Red	Orange/Red
16	Yellow/Red	Yellow/Red	Yellow/Red	Yellow/Red	Yellow/Red	Yellow/Red
17	Brown/Red	Brown/Red	Brown/Red	Brown/Red	Brown/Red	Brown/Red
18	Black/Blue	Black/Blue	Black/Blue	Black/Blue	Black/Blue	Black/Blue
19	Red/Blue	Red/Blue	Red/Blue	Red/Blue	Red/Blue	Red/Blue
20	Black/Brown	Orange/Blue	Black/Brown	Black/Brown	Black/Brown	Black/Brown
21	Brown/Yellow	Yellow/Blue	Brown/Yellow	Brown/Yellow	Brown/Yellow	Brown/Yellow
22	Orange/Yellow	Brown/Blue	Orange/Yellow	Orange/Yellow	Orange/Yellow	Orange/Yellow
23	Blue/Yellow	Black/Orange	Blue/Yellow	Blue/Yellow	Blue/Yellow	Blue/Yellow
24	Red/Yellow	Red/Orange	Red/Yellow	Red/Yellow	Red/Yellow	Red/Yellow
25	Black/Yellow	Blue/Orange	Black/Yellow	Black/Yellow	Black/Yellow	Black/Yellow
26	Brown/Orange	Yellow/Orange	Brown/Orange	Brown/Orange	Brown/Orange	Brown/Orange
27	Yellow/Orange	Brown/Orange	Yellow/Orange	Yellow/Orange	Yellow/Orange	Yellow/Orange
28	Blue/Orange	Blue/Orange	Blue/Orange	Blue/Orange	Blue/Orange	Blue/Orange
29	Red/Orange	Red/Orange	Red/Orange	Red/Orange	Red/Orange	Red/Orange
30	Black/Orange	Black/Orange	Black/Orange	Black/Orange	Black/Orange	Black/Orange
31	Brown/Blue	Brown/Blue	Brown/Blue	Brown/Blue	Brown/Blue	Brown/Blue
32	Yellow/Blue	Yellow/Blue	Yellow/Blue	Yellow/Blue	Yellow/Blue	Yellow/Blue
33	Orange/Blue	Orange/Blue	Orange/Blue	Orange/Blue	Orange/Blue	Orange/Blue

\*Not UL TC-ER.

